Remarks

This Response is submitted in response to the outstanding Office Action wherein the Examiner rejected claims 1-16 and 19.

Claims 1-16, 19 and 20 are currently pending. Claims 1-16, and 19 stand rejected and claim 20 is newly added. Independent claims 1 and 16 have been amended to recite affirmatively that the polymer is sufficiently embrittled to improve resistance to feathering and angel hair formation.

Prior to discussing the present grounds of rejection, Applicants take this opportunity to set forth the following brief remarks about their invention.

Applicants have discovered that embrittlement of a polymer coating surprisingly eliminates the incidence of angel hair and feathering in the opening of scored beverage can lids. Prior to Applicants' discovery, it was believed that irradiation of a fully cross-linked polymer coating to cause substantial chain scission, which is how Applicants achieve embrittlement, was disadvantageous, since breaking polymer bonds typically results in loss of strength, adhesion failure, and/or yellowing of the polymer coating. Accordingly, it is respectfully submitted that the method as claimed clearly describes the benefits obtained by the present invention, which are not shown or suggested in the prior art. In fact, the prior art teaches minimizing chain scissioning as much as possible. Thus, Applicants respectfully summit that the application is in condition for immediate allowance.

Applicants have added new Claim 20 to recite a process for making a metal-polymer composite suitable for shaping into food and beverage container end panels and container bodies comprising embrittling said polymer in said coating, thereby to improve resistance of said coating to feathering and angel hair formation. Support for newly added Claim 20 is found in Claim 19. Applicants submit that claim 20 is in condition for allowance and request allowance thereof.

Turning to the Office Action, the Examiner rejected Claims 1, 2, 4-6, 8-15, and 19 under 35 U.S.C. §103(a), as allegedly being unpatentable over U.S. Patent No. 4,452,374 to Hitchcock et al. ("Hitchcock et al.") in view of U.S. Patent No. 4,044,187 to Kremkau ("Kremkau"). Claims 1, 4-10, 16 and 19 stand rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over U.S. Patent No. 4,308,084 to Ohtusuki et al. ("Ohtusuki et al.") in view of Kremkau. Claims 1-10, and 16 and 19 stand rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over U.S. Patent No. 5,582,319 to Heyes et al. ("Heyes et al.") in view of Kremkau. Applicants respectfully traverse because (1) the prior art references fail to teach or suggest all of the claimed limitations and (2) the prior art references taken as a whole teach away from Applicants' invention.

To establish a *prima facie* case of obviousness three criteria must be met. First there must be some suggestion or motivation, either in the references themselves or the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1543, 1457-58 (Fed. Cir. 1998). Second, there must be a reasonable expectation

of success. *In re Merck & Co, Inc.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the prior art reference (or references) combined must teach or suggest all of the claimed limitations. *In re Royka,* 490 F.2d 981, 180 USPQ 580 (CCPA 1974). References that teach away cannot serve to create a *prima facie* case of obviousness. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354, 60 USPQ 2d 1001 (Fed. Cir. 2001).

The §103 rejections of Claims 1, 2, 4-6, 8-15 and 19 are traversed because the prior art references do not teach or suggest all of the claimed limitations. Applicants submit that the applied references fail to render Applicants' claimed invention unpatentable, since none of the applied prior art, either alone or in combination, teach or suggest a process for making a metal-polymer composite suitable for shaping into food and beverage container end panels and container bodies, comprising the step of scissioning polymer chains in a polymer by irradiating a coating with an electron beam, wherein said irradiation is carried out at a sufficient energy and for a sufficient time to sufficiently embrittle said polymer in said coating, thereby to improve resistance of the coating to feathering and angel hair formation, as recited in Claims 1, 16, 19 and 20.

Referring to Page 4 of the present Office Action, the Examiner admits that "Hitchcock et al. does not teach scissioning polymer chains by irradiating the coating with an electron beam to improve resistance to feathering and angle hair". Therefore, since Hitchcock et al. does not teach or suggest scissioning polymer chains by irradiating the coating with an electron beam to improve resistance to feathering and angle hair, the

reference fails to teach or suggest each and every limitation of Applicant's method, as recited in Claims 1, 16 and 19.

Referring to Pages 4 and 5 of the present Office Action, to meet the limitation of scissioning polymer chains, the Examiner relies on the disclosure of Kremkau for allegedly teaching that increased bond strength, seal strength and dimensional stability of films laminates by irradiating a the polyolefin film using an electron beam. The Examiner further alleges that Column 1, lines 6-9, of the Kremkau disclosure, teaches a method that includes the steps of irradiating a polyolefin film with about 2-20 megarads to form a laminate, and the irradiating the entire laminate using an additional dosage between 2 and 20 megarads. The Examiner further alleges that irradiating the crosslinked layer with a second radiation of 2-20 megarands will inherently result in scissioning of polymer chains, since it is stated in Applicants' disclosure that applying additional radiation of 2-20 megarads to an already crosslinked polymer will result in chain scissioning.

Applicants submit that the Kremkau reference does not render Applicants' invention unpatentable, since Kremkau fails to teach or suggest scissioning polymer chains by irradiating the coating with an electron beam wherein said irradiating is carried out at a *sufficient energy* and for a *sufficient time to sufficiently embrittle said polymer in said coating to improve resistance to feathering and angle hair*, as recited in Claims 1, 16 and 19. The amount of scissioning and embrittlement depends on a number of parameters including electron beam irradiation, polymer coating composition, exposure time and

coating thickness. Kremkau does not teach a combination of parameters in which the polymer is sufficiently embrittled to improve resistance to feathering and angel hair.

In sum, Kremkau fails to teach or suggest scissioning polymer chains in the polymer by irradiating the coating with an electron beam, wherein said irradiation is carried out at a sufficient energy and for a sufficient time to sufficiently embrittle said polymer in said coating, thereby to improve resistance of said coating to feathering and angel hair formation, as recited in Claims 1, 16 and 19. Therefore, since the combination of Kremkau and Hitchcock et al. fail to teach or suggest each and every limitation of Applicants' claimed method, Applicants respectfully submit that the present § 103 rejection has been obviated and Applicants respectfully request that the § 103 rejections of Claims 1, 2, 4-6 and 8-15 be withdrawn.

Moreover, Kremkau cannot serve to create a *prima facie* case of obviousness because it teaches away from the claimed invention.

References that teach away cannot serve to create a *prima facie* case of obviousness. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354, 60 USPQ 2d 1001 (Fed. Cir. 2001). A reference should be considered as a whole and portions arguing against or teaching away from the claimed invention must be considered. *Bausch & Lomb, Inc v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987). A single line in a prior art reference should not be taken out of context and relied upon with the benefit of hindsight to show obviousness. *Id.* A reference may be said to teach away when a person of ordinary skill, upon reading

the reference, would be lead in a direction divergent from the path that was taken by the applicant. *Tec Air, Inc. v. Denso Mfg. Mich, Inc.*, 192 F.3d 1353, 1360, 52 USPQ 2d 1294, 1298 (Fed. Cir. 1999).

Kremkau discloses that it is advantageous to have a laminate including at least two cross-linkable polymer layers, in which one of the layers has a higher degree of crosslinking than the other. Kremkau discloses increased crosslinking to increase the polymer coatings adhesion and resistance to delamination to the substrate. Kremkau teaches away from Applicants' invention by teaching the importance of increasing crosslinking (i.e. minimizing scissioning and embrittlement) in order to resist delaminating and maintain dimensional stability of the polymer layers. Contrary to the Applicants' disclosure, wherein Applicants are scissioning polymer bonds to embrittle the polymer coating, Kremkau leads away from Applicants' claimed method by teaching that increased crosslinking advantageously results in increased adhesion. Therefore, since Kremkau teaches away from sufficient embrittlement of a polymer in a coating to improve resistance of the coating to feathering and angel hair formation, Kremkau cannot be used as a § 103 reference. Applicants respectfully submit that the present § 103 rejection has been obviated and request that the § 103 rejections of Claims 1, 2, 4-6, 15 and 19 be withdrawn.

Claims 1, 4-10, and 16, stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable Ohtusuki et al. in view of Kremkau. Referring to Page 4 of the present Office Action, the Examiner admits that Ohtusuki et al. fail to teach or suggest

"using electron beam irradiation to scission the polymer chains to improve resistance to feathering and angel hair formation", as recited in Claims 1, 16 and 19. Kremkau fail to fulfill the deficiencies in Ohtusuki et al. for the same reasons Kremkau fail to fulfill the deficiencies in Hitchock et al. The above comments regarding Kremkau are incorporate herein by reference. Therefore, since the combination of Ohstusuki et al. and Kremkau fail to teach or suggest each and every limitation recited in Claims 1, 16 and 19, and Kremkau teaches against sufficient embrittlement, Applicants submit that the present §103 rejection has been obviated and respectfully request withdrawal thereof.

Claims 1-10, and 16 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Heyes et al. in view of Kremkau. Referring to Page 6 of the present Office Action, the Examiner admits that Heyes et al. fails to teach or suggest "using electron beam irradiation to scission the polymer chains to improve resistance to feathering and angel hair formation", as recited in Claims 1, 16 and 19. Kremkau fails to fulfill the deficiencies in Heyes et al. for the same reasons Kremkau fails to fulfill the deficiencies in Hitchock et al and/or Ohstusuki et al. The above comments regarding Kremkau are incorporate herein by reference. Therefore, since the combination of Heyes et al. and Kremkau fail to teach or suggest each and every limitation recited in Claims 1, 16 and 19, and Kremkau teaches against sufficient embrittlement applicants submit that the present §103 rejection has been obviated and respectfully request withdrawal thereof.

Accordingly, the Examiner is respectfully requested to reconsider the application, withdraw the rejections and issue an immediate a favorable action thereon. If

upon review of the application, the Examiner is unable issue an immediate Notice of Allowance, the Examiner is respectfully requested to telephone the undersigned attorney with a view towards resolving any outstanding issues.

An early and favorable action is earnestly solicited.

Respectfully submitted,

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